Reserve METOC Support to ASW

LCDR Kimberley Lunde, NMORA HQ 0282, 1 May 04

- Operations conducted with the intention of denying the enemy the effective use of submarines
- ASW platforms
  - Ships
  - Aircraft
  - Submarines
- A component of Undersea Warfare

METOC Battlespace Components

METOC Purview

Met Conditions
(e.g., radar prop, wind, temp, clouds, vis, IR, icing, turbulence)

Sea Conditions
(e.g., sea state, currents, tides, temp, ice cover, ballasting)

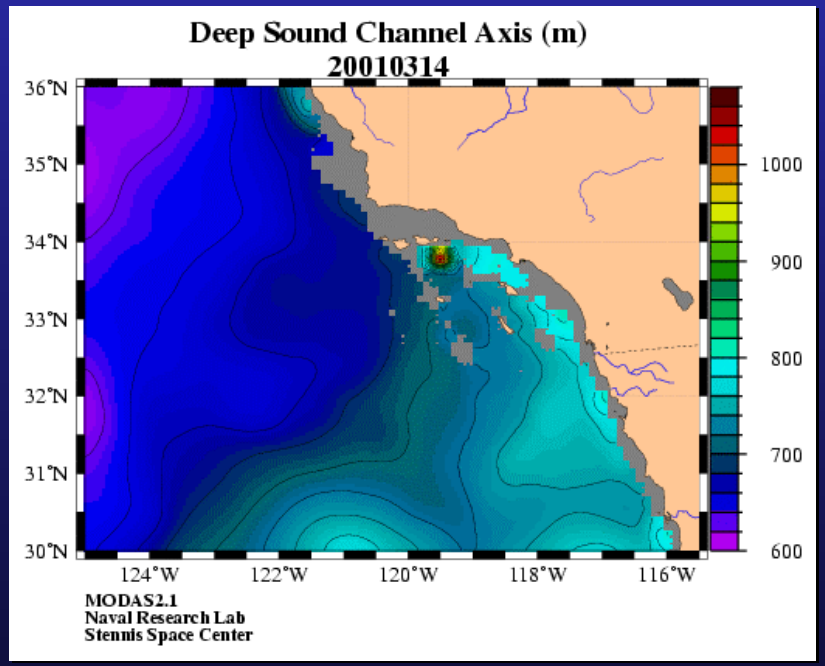
Bio-Optical Conditions
(e.g., visibility, lidar performance, vulnerability)

Acoustic Conditions
(e.g., sonar performance, ambient noise)

Boundary Conditions
(e.g., land masses, rivers, shorelines, minefields)

Bottom Conditions
(e.g., bathymetry, bottom type, mines, wrecks, magnetics, gravity)

ASW Tactical Decision Aid: MODAS



"...the first tactical oceanography product I've seen that is actually tactical."

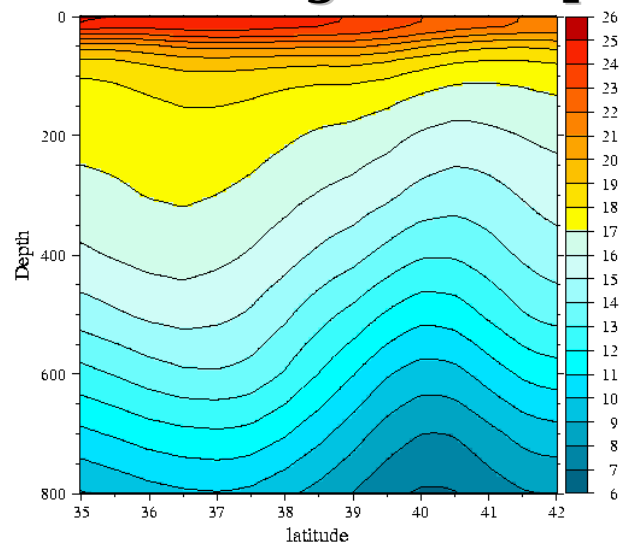
VADM Giambastiani

- Modular Ocean Data Assimilation System
- 3-D Fields
  - Temperature, salinity, sound speed, geostrophic currents
  - EOF, byte-encoded & wavelet compression
- 2-D Fields
  - Fields of mixed layer depth, sonic layer depth, deep & shallow sound channel axes, depth excess
  - Vertical slice of temperature, salinity & sound speed
  - GIF image or gridded
- Analysis Profiles
  - JJXX, JJYY, KKXX, JJVV, KKYY

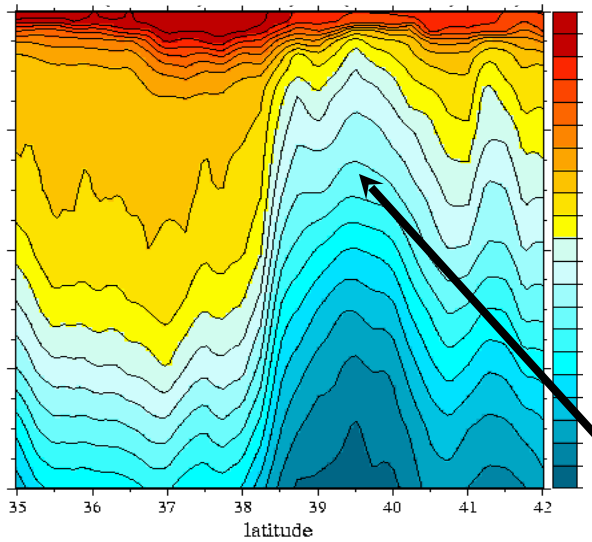
MODAS: Value Added from Synthetic BTs

MODAS Results

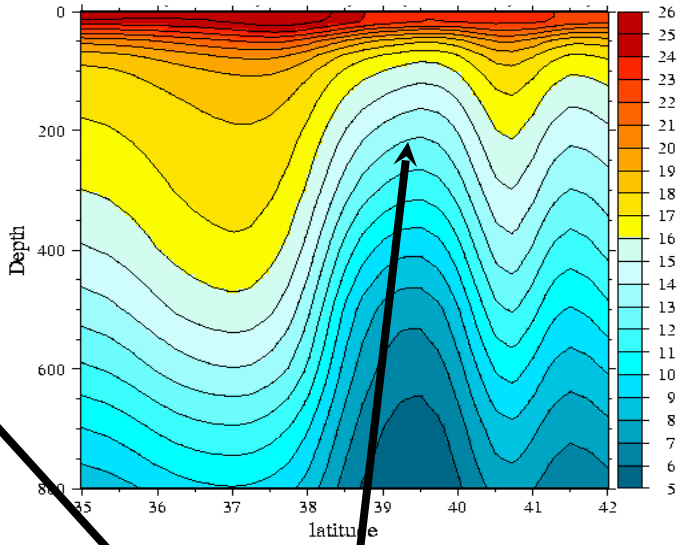
Climatological Temp

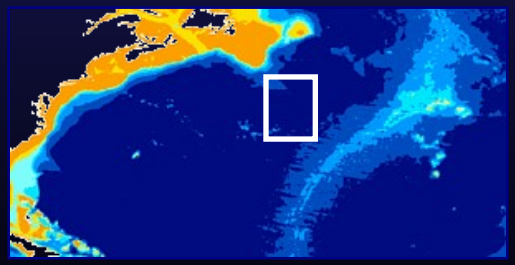


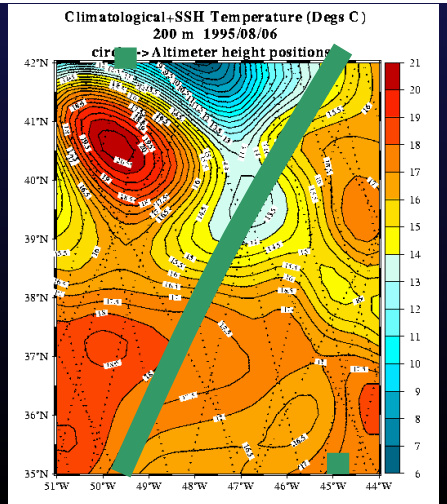
AXBT Temp



SSH + SST + Clim



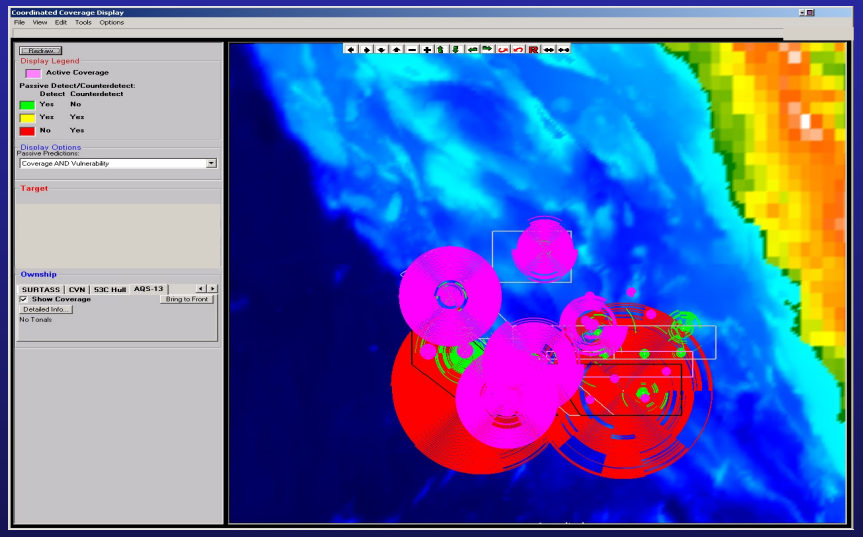


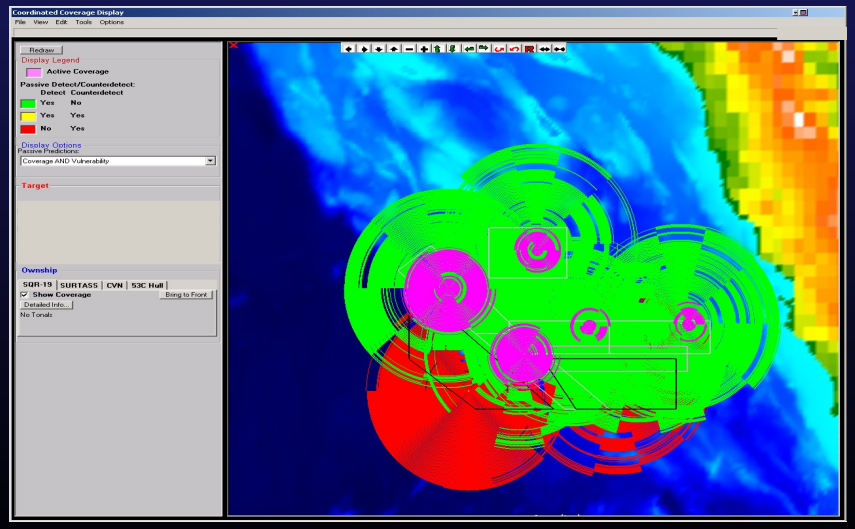


Cold core eddy

MODAS Temperature at 200m

ASW Tactical Decision Aid: PC-IMAT





- PC-Interactive Multi-sensor Analysis Training
- TDA used on subs
- Primarily acoustic but includes optics, mag, EM
- BT merges with historical data
- Contains MODAS lite
- Example graphic compares AQS-13 & SQR-19 sonar performance

Emergency Surge Capable (ASW)

Training Element	METOC Officer	Tactical Forecaster	Assistant Forecaster
JMTC	15		
Tac War Ovrvw		5	
GI&S	2	2	2
JMTAC	5	5	5
Satellite Interp	2	2	2
Tac Ocn Review	3	3	3
PC-IMAT	3	3	3
Acou Supp Brf	1	1	1
Basic OA	4	4	4

*** Currently no formal training in MODAS available; however NAVO will as

Surge Capable (ASW)

Training Element	METOC Officer	Tactical Forecaster	Assistant Forecaster
Emrg Surge Cap	35	25	20
SMOA	2		
Tac Ocn Wkshp	2	2	2
Coord ASW Ops	5	5	
Interm OA Team	4	4	4
Exercise Supp*	12	12	12
Total Days	60	48	38

*Exercise Support and/or other specialized training

Deployable (ASW)

Training Element	METOC Officer	Tactical Forecaster	Assistant Forecaster
Surge Capable	58	46	36
Advan OA Team	4	4	4
Exercise Supp	12	12	12
Total Days	**74**	**62**	**52**

Issues:

- Streamlining this training (e.g., courses on CD-ROM, back to back courses)
- Better defining “Exercise Support” plan
- Need to develop time line

Opportunities for Specialized Training

- SHAREM
  - Ship Antisubmarine Warfare Readiness / Effectiveness Measuring
  - Conducted by 7th Fleet, 2X year
- JTFEX, COMPTUEX
- Yokosuka – CTF74 support
- Littoral Warfare Teams

Littoral Warfare Teams

- Expand NAVO survey capability to include “Rapid Environmental Assessment (REA)” & “persistant surveillance”
- Manned by Littoral Warfare Teams composed of civ & mil
- Continuous environmental assessment via 2-3 month surveys and long-term sensor deployments
- Increased sensor capabilities – characterize environment & transmit to Theatre Undersea Warfare commander
- Try first in West Pac
- First address ASW, other warfare areas may follow
- Working on defining mission now; defining manning, etc to follow
- Idea in “concept development; Awaiting Admiral McGee’s campaign plan
- CNMOC POCs LCDR Tim Gallaudet (plans) and Bruce Northridge (data, models)

ASW METOC Support

Satellite Data
* altimetry
* temperature

MODAS 2.1

Regional Ocean Analyses

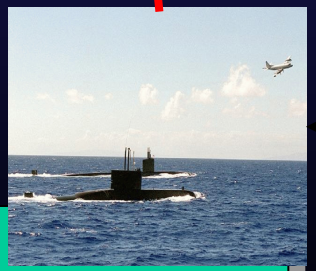
In Situ Measurements: Temperature, Salinity

Raw Data Flow

Local Analyses

MODAS 1.6

PC-IMAT



On Scene Analyses

PC-IMAT

Regional Centers